residual blocks of the current block may be decoded. Information regarding the residual blocks may be entropy-decoded, inversely quantized, and inversely transformed to restore the residual blocks. Also, information indicating that the current block is the same as a predicted block may be decoded.

[0173] When the motion vector of the current block is determined from among a plurality of motion vector candidates as described above, information defining a motion vector to be used to decode the current block from among the plurality of motion vector candidates may be decoded. If a result of the decoding of the information regarding the prediction direction reveals that the prediction direction is the first direction, information indicating a first-direction motion vector of the current block from among the plurality of motion vector candidates may be decoded. If the result of the decoding of the information regarding the prediction direction reveals that the prediction direction is the second direction, information indicating a second-direction motion vector of the current block from among the plurality of motion vector candidates may be decoded. If the result of the decoding of the information regarding the prediction direction reveals that the prediction direction is the bi-directions, the information indicating the first-direction motion vector and the information indicating the second-direction motion vector from among the plurality of motion vector candidates may be decoded.

[0174] In operation 1620, the image decoding apparatus determines a prediction direction in which the current block is to be predicted, based on the information regarding the prediction direction decoded in operation 1610. The prediction direction in which the current block is to be predicted is determined based on a binary number corresponding to the prediction direction, the information of which was decoded in operation 1610. If the prediction direction in which the current block is to be predicted is determined, at least one motion vector for predicting the current block in the determined prediction direction is determined.

[0175] As described above, the motion vector of the current block may be implicitly determined according to a method of determining a motion vector, which is shared between an encoding side and a decoding side. If the motion vector of the current block is explicitly selected from among a plurality of motion vector candidates, then the plurality of motion vector candidates are produced based on at least one block motion vector decoded before decoding of the current block and the motion vector of the current block may be determined from among the plurality of motion vector candidates. The motion vector of the current block may be determined, based on the information indicating the motion vector of the current block from among the plurality of motion vector candidates, which was decoded in operation 1610. At least one from among a first-direction motion vector and a second-direction motion vector may be determined based on the information decoded in operation 1610.

[0176] In operation 1630, the image decoding apparatus restores the current block. A predicted block of the current block is determined based on the motion vector of the current block determined in operation 1620, and the current block is restored based on the predicted block.

[0177] The predicted block of the current block may be produced by performing one from among first-direction prediction, second-direction prediction, and bi-directional prediction, based on at least one of the first-direction motion vector and the second-direction motion vector determined in operation 1620.

[0178] If a residual block is restored in operation 1610, the predicted block is combined with the restored residual block so as to restore the current block. If the information indicating that the predicted block is the same as the current block is decoded, the predicted block is used as the current block.

[0179] While exemplary embodiments have been particularly shown and described above, it would be appreciated by those of ordinary skill in the art that changes may be made in these exemplary embodiments without departing from the principles and spirit of the inventive concept, the scope of which is defined in the claims and their equivalents. Also, a system according to an exemplary embodiment may be embodied as computer readable code in a computer readable recording medium.

[0180] For example, each of an image encoding apparatus, an image decoding apparatus, a motion vector encoding apparatus, and a motion vector decoding apparatus according to exemplary embodiments may include a bus coupled to the units of the apparatuses illustrated in FIGS. 1, 2, 4, 5, 9, and 14, and at least one processor connected to the bus. Each of the apparatuses may further include memory that is connected to the bus so as to store commands, received messages, or produced messages and is coupled to the at least one processor for performing the operations described above.

[0181] The computer readable recording medium may be any recording apparatus capable of storing data that is read by a computer system, e.g., a read-only memory (ROM), a random access memory (RAM), a compact disc (CD)-ROM, a magnetic tape, a floppy disk, an optical data storage device, and so on. The computer readable recording medium can be distributed among computer systems that are interconnected through a network, and the present invention may be stored and implemented as computer readable code in the distributed system.

1. An image decoding method comprising:

hierarchically splitting a maximum coding unit into at least one coding unit based on split information obtained from a bitstream;

determining a current block in a coding unit among the at least one coding unit;

obtaining information regarding a prediction direction to be used to decode the current block, the information indicating one of an LO direction, an L1 direction, and a bi-direction;

determining motion vector candidates of the current block based on a motion vector of at least one block decoded before decoding of the current block; and

determining at least one motion vector of the current block based on at least one of a motion vector candidate in the LO direction and a motion vector candidate in the L1 direction, from among the determined motion vector candidates, according to the information regarding a prediction direction,

wherein the at least one block decoded before decoding of the current block comprises at least one of a first block located on a left side of a leftmost block from among lower blocks adjacent to a lower side of the current block and a second block located on an upper side of the first block,